**MATHEMATICS STAGE 3**

**TEACHING AND LEARNING OVERVIEW**

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| TERM: | WEEK: 16 | STRAND:Number and Algebra | **SUB-STRAND:**  FRACTIONS & DECIMALS 2 | **WORKING MATHEMATICALLY:**  MA3-1WM; MA3-2WM; MA3-3WM |
| OUTCOMES: MA3-7NA | | **Compares, orders and calculates with fractions, decimals and percentages.** | | |
| **CONTENT:** | | **Multiply and divide decimals by powers of 10 (ACMNA130)**  recognise the number patterns formed when decimals are multiplied and divided by 10, 100 and 1000 CT  multiply and divide decimals by 10, 100 and 1000  use a calculator to explore the effect of multiplying and dividing decimals by multiples of 10 (Reasoning) | | |
| ASSESSMENT FOR LEARNING (PRE-ASSESSMENT) | | * <http://www.bbc.co.uk/schools/gcsebitesize/maths/number/decimalsrev3.shtml>   This is an online quiz. | | |
| WARM UP / DRILL | | * Count by 10s to 100  * Count y 100s to 1000 * Count by 1000s to 1,000,000 * See attached sheet labelled Warm Up Activity. | | |
| TENS ACTIVITYNEWMAN’S PROBLEMINVESTIGATION | | Fred Glitz goes to the shop and sees apples on sale for $1.57 per kg. How much does Fred pay for 10 kgs? How much would he pay for 100 kgs? | | |
| QUALITY TEACHING ELEMENTS | | **INTELLECTUAL QUALITY** | **QUALITY LEARNING ENVIRONMENT** | **SIGNIFICANCE** |
| * Deep knowledge * Deep understanding * Problematic knowledge * Higher-order thinking * Metalanguage * Substantive communication | * Explicit quality criteria * Engagement * High expectations * Social support * Students’ self-regulation * Student direction | * Background knowledge * Cultural knowledge * Knowledge integration * Inclusivity * Connectedness * Narrative |
| RESOURCES | | Calculators  Computers with Internet access | | |

**TEACHING AND LEARNING EXPERIENCES**

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| WHOLE CLASS INSTRUCTION MODELLED ACTIVITIES | GUIDED & INDEPENDENT ACTIVITIES | |
| * **Number Patterns**   Students are given a table such as:    They are asked to continue the pattern and describe the  number pattern created. Students are encouraged to create  further number patterns and are given access to a calculator. Further number patterns could include:   Possible questions include:  ❚ \_what happens if you multiply a number by a multiple of ten?  ❚ \_what happens if you divide a number by a multiple of ten?  ❚ \_can you devise a strategy for multiplying by a multiple of ten?  ❚ \_can you devise a strategy for dividing by a multiple of ten?  When we divide by 10 the number becomes smaller by 1 place value.  When we divide by 100 the number becomes smaller by 2 place values.  When we divide by 1000 the number becomes smaller by 3 place values.  Look what happens to 45 when we apply these rules:  **45 ÷ 10 = 4.5 45 ÷ 100 = 0.45 45 ÷ 1000 = 0.045** | LEARNING SEQUENCERemediationS2 or Early S3 |  |
| LEARNING SEQUENCES3 | * Number - Fractions: Decimals – multiplying decimals x 10, x 100, x 1000 * Investigation:   <http://www.themathpage.com/arith/multiply-by-powers-of-10.htm#q1>  <http://www.ixl.com/math/grade-6/multiply-and-divide-decimals-by-powers-of-ten>   * Demonstrate how to use a calculator to complete |
| LEARNING SEQUENCEExtensionEarly S4 | * Write an algorithm that would show how to multiply by 1 million. |
| **EVALUATION & REFLECTION** | **Student Engagement: Resources:**  **Achievement of Outcomes: Follow-up:** |